

Curriculum Vitae of Srinivas Aluru

Professor, School of Computational Science and Engineering
College of Computing, Georgia Institute of Technology
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I. Education

Ph. D	Computer Science	Iowa State University	1994
M.S.	Computer Science	Iowa State University	1991
B. Tech	Computer Science	Indian Institute of Technology, Madras, India	1989

II. Professional Appointments

Current Academic Appointment

Professor, School of Computational Science and Engineering
College of Computing
Georgia Institute of Technology

Prior Academic Appointments

Iowa State University

Professor, Dept. of Electrical and Computer Engineering, July 2005 – July 2013

Ross Martin Mehl and Marylyne Munas Mehl Professorship, Dept. of Electrical and Computer Engineering, Aug 2009 – July 2013

Stanley Chair in Interdisciplinary Engineering, College of Engineering, Aug 2006 – May 2009

Associate Professor, Dept. of Electrical and Computer Engineering, July 2001 – June 2005

Assistant Professor, Dept. of Electrical and Computer Engineering, Aug 1999 – June 2001

Courtesy Appointment, Dept. of Computer Science, Aug 1999 – Present

Member, L.H. Baker Center for Bioinformatics & Biological Statistics, Aug 1999 – Present

Member, Center for Plant Genomics, July 2004 – Present

New Mexico State University

Assistant Professor, Dept. of Computer Science, Aug 1996 – July 1999

Syracuse University

Visiting Assistant Professor, School of Computer and Information Science, Aug 1994 – July 1996

Visiting Academic Appointments

Professor, Computer Science and Engineering, IIT Bombay, 2009 – present.

Visiting Professor, Kanwal Rekhi School of Information Technology, IIT Bombay, Fall 2006

Administrative Appointments

Chair, Bioinformatics and Computational Biology, Aug 2005 – July 2007

Associate Chair – Research, Electrical and Computer Engineering, Jan 2003 – June 2006

Associate Chair, Bioinformatics and Computational Biology, Aug 2003 – July 2005

III. Honors and Awards

- 2011 Iowa State University Award for Outstanding Achievement in Research
2010 Fellow, American Association for the Advancement of Science (AAAS)
2010 Fellow, Institute for Electrical and Electronics Engineers (IEEE)
2009-2013 Ross Martin Mehl and Marylyne Munas Mehl Professorship, Dept. of Electrical and Computer Engineering, Iowa State University
2009-2012 Bajaj Chair Professorship, Computer Science and Engineering, Indian Institute of Technology Bombay
2009 Swarnajayanti Fellowship, Department of Science and Technology, Government of India (awarded 2-4 per year in all branches of engineering and computer science combined)
2007 Best paper finalist, *ACM/IEEE Supercomputing Conference (SC)*
2007 Computer World Honors Program Laureate and Finalist for 21st Century Achievement Award in Energy, Environment and Agriculture (for innovative use of information technology for the benefit of society)
2006-2009 Stanley Chair in Interdisciplinary Engineering, Iowa State University
2006 Iowa State University Foundation Award for Mid-Career Achievement in Research
2006 Best paper award, *IEEE International Parallel and Distributed Processing Symposium (IPDPS)*
2005 Best paper award, *IEEE Computational Systems Bioinformatics (CSB) conference*
2005 Warren B. Boast Undergraduate Teaching Award, Iowa State University
2004-2006 IEEE Computer Society Distinguished Visitor
2002 IBM Faculty Award
2002 Young Engineering Faculty Research Award, Iowa State University
2002 Best paper finalist, *ACM/IEEE Supercomputing Conference (SC)*
2002 IEEE Senior Member
1997 NSF CAREER Award
1993 Teaching Excellence Award, Iowa State University.
1989 Premium for Academic Excellence Award, Iowa State University
1985 Merit certificate for securing 48th rank in the Joint Entrance Examination for admission to the Indian Institutes of Technology

IV. Academic areas of specialization

Teaching – Courses Developed and Taught

Iowa State University

1. CprE/ComS/BCB/Gen 548 Fundamental Algorithms in Computational Biology
2. CprE/ComS/BCB 549 Advanced Algorithms in Computational Biology
3. CprE 426/526 Introduction to Parallel Algorithms and Programming
4. CprE 626 Parallel Algorithms for Scientific Applications

New Mexico State University

5. CS 562 Advanced Topics in Computational Science and Engg.
6. CS 552 Introduction to Computational Science and Engg.
7. CS 490 Introduction to Parallel Computing

Syracuse University

8. CIS 600 Computational Geometry
9. CIS 700 Parallel and Distributed Algorithms

Teaching – Courses Taught

Georgia Institute of Technology

1. CSE 6220 High-Performance Computing

Iowa State University

2. CprE 310 Theoretical Foundations of Computer Engineering

New Mexico State University

3. CS 473 Architectural Concepts I
4. CS 573 Architectural Concepts II
5. CS 272 Introduction to Data Structures

Syracuse University

6. CIS 600 Principles of Database Systems
7. CIS 710 Parallel Computing
8. ECS 101 Introduction to Engineering and Computer Science
9. CIS 655 Computer Architecture
10. CIS 657 Operating Systems

Research Interests

1. High Performance Computing — Parallel Algorithms and Applications, Applications on emerging platforms (multicores, manycores, clouds).
2. Bioinformatics and Computational Biology — Computational Genomics and Metagenomics, Systems Biology, and High Performance/Parallel Computational Biology.
3. Combinatorial Scientific Computing — Spatial Domain Decomposition Methods, Fast Multipole Method, Computational Electromagnetics, and Materials Informatics.

V. Grants and Contracts

Funded External Grants

1. S. Dwarakadas, M. L. Scott and **S. Aluru (collaborative lead-PI)**, National Science Foundation, “Collaborative Research:XPS:CLCCA: Performance Portable Abstractions for Large-Scale Irregular Computations”, \$749,911, Sep 2013 – Aug 2016.
2. Y. Yin, M. Aluru and **S. Aluru (co-PI)**, National Science Foundation, “Signaling Network for Brassinosteroid-Regulated Gene Expression in Arabidopsis”, \$863,615, Feb 2013 – Jan 2016.
3. **S. Aluru (PI)**, W. Feng, K. Olukotun, P. Schnable, C. Sing and J. Zola, NSF/NIH Bigdata Initiative, “BIGDATA: Mid-Scale: DA: Collaborative Research: Genomes Galore - Core Techniques, Libraries, and Domain Specific Languages for High-Throughput DNA Sequencing”, \$2,000,000, Jan 2013 – Dec 2015.
4. A. Somani, **S. Aluru (co-PI)**, R. Fox, E. Takle and M. Gordon, National Science Foundation, “MRI: Acquisition of a HPC system for Data-Driven Discovery in Science and Engineering”, \$1,841,346, Aug 2012 – July 2015.
5. **S. Aluru (PI)**, K. Dorman and P.S. Schnable, National Science Foundation, “AF:Medium: Parallel Algorithms and Software for High-throughput Sequence Assembly”, \$1,000,000, May 2012 – Apr 2015.
6. K. Dorman, **S. Aluru (co-PI)**, B. Blitvich, and A. Ramamoorthy, National Science Foundation, “ATD: Models for (Meta)Genome Identification from Next Generation Sequence Data with Errors”, \$660,922, Sep 2011 – July 2014.
7. **S. Aluru (PI)**, Micron Technology Foundation, “High-throughput Computational Biology”, \$95,000, Sep 2011 – Dec 2012.
8. S. Balasubramaniam and **S. Aluru (co-PI)**, National Science Foundation, \$496,335, “AF:Small: Parallel Transient Solvers for Multiscale Electromagnetics”, Aug 2010 – Aug 2013.
9. **S. Aluru (PI)**, Department of Science and Technology Swarnajayanti Fellowship, \$370,000, “Large Scale Gene Expression Analysis on High Performance Parallel Computers for Functional Genomics and Systems Biology”, Nov 2009 – Nov 2014.

10. K. Rajan, **S. Aluru (co-PI)** and B. Ganapathysubramanian, National Science Foundation, \$952,884, “CDI: Dimensionality-Reduction and Reconstruction Tools for Atom Probe Tomography”, Sep 2009 – Aug 2013.
11. **S. Aluru (PI)**, B. Ganapathysubramanian and K. Rajan, National Science Foundation, \$497,784, “Parallel Methods for Large, Atomic-scale Quantitative Analysis of Materials”, May 2009 – May 2012.
12. **S. Aluru (PI)**, Roy J. Carver Charitable Trust, \$158,596, “High Performance Computing Facility for Iowa State University”, April 2009.
13. **S. Aluru (PI)**, M. Aluru and D.S. Nettleton, National Science Foundation, \$383,000, “CPA-ACR: Parallel Algorithms and Software for Large Scale Microarray Data Analysis and Gene Network Inference”, July 2008 – June 2012.
14. **S. Aluru (PI)**, S. Balasubramanian and S.J. Plimpton, National Science Foundation, \$103,063, “SGER: Exploring Timescale Parallelization for Long-timescale Molecular Dynamics”, May 2008 – Oct 2009.
15. **S. Aluru (PI)**, M. Aluru, J. McCalley, K. Rajan, and A. Somani, National Science Foundation, \$719,000, “CRI:IAD Acquisition of a Cluster and High Performance Storage for Data-intensive Applications in Materials Science, Power Systems and Systems Biology”, April 2008 – March 2011.
16. **S. Aluru (PI)**, National Science Foundation, \$102,600, “Collaborative Research: PACE - Parallel Accelerated Cartesian Expansions with Application to Molecular Dynamics”, Sep 2007 – Aug 2010.
17. A.K. Somani, **S. Aluru (co-PI)**, R. Jernigan, R. Kanwar, J.D. McCalley and D.T. Rover, Department of Education, \$506,688, “GAANN: Training Students for Computing Oriented Interdisciplinary Careers in Research and Education”, Aug 2006 – Aug 2010.
18. P.S. Schnable, **S. Aluru (co-PI)**, U.S.-Israel Binational Agricultural Research and Development Fund, \$283,000, “Building Consensus Genetic Maps for Maize and Wheat”, July 2006 – June 2010.
19. R.K. Wilson, W.R. McCombie, R. Martienssen, D. Ware, L. Stein, P.S. Schnable, **S. Aluru (co-PI)**, R. Wing and S. Clifton, National Science Foundation, \$29,400,000, “Sequencing the Maize Genome”, Nov 2005 – May 2010.
20. **S. Aluru (PI)**, R. Jernigan, P.S. Schnable and A.K. Somani, National Science Foundation, \$600,000, “Acquisition of a 512-node BlueGene/L Supercomputer for Large-Scale Applications in Genomics and Systems Biology”, Aug 2005 – Jul 2008.
21. **S. Aluru (PI)**, National Science Foundation, \$262,000, “Techniques and Tools for Parallel Solution of Irregular Problems”, Nov 2004 – Nov 2008.
22. **S. Aluru (PI)** and P.S. Schnable, National Science Foundation, \$440,494, “Efficient Representation and Manipulation of Large-Scale Biological Sequence Data”, Sep 2004 – Aug 2008.

23. **S. Aluru (PI)**, National Science Foundation, \$144,000 (subcontract from New Mexico State University), “CREST: Center for Research Excellence in Bioinformatics and Computational Biology”, Sep 2004 – Aug 2009.
24. **S. Aluru (PI)**, National Science Foundation, \$162,849, “Collaborative Research: Parallel Hybrid Differential and Integral Equation Based Solvers for Time Domain Electromagnetic Analysis with Application to Circuits”, Aug 2003 – Aug 2007.
25. **S. Aluru (PI)**, V. Brendel and S. Kothari, National Science Foundation, \$160,000, “Parallel Algorithms and Software for EST Clustering”, Jul 2002 – Dec 2004.
26. **S. Aluru (PI)**, IBM Corporation Faculty Award, \$30,000, August 2002 – July 2003.
27. **S. Aluru (PI)**, S. Balasubramaniam, V. Brendel, S. Kothari and D. Rover, National Science Foundation, \$166,518, “CISE Research Resources: Acquisition of a Cluster for Experimental Parallel Computing Research in Scientific Computing and Computational Biology”, Sep 2001 – Sep 2004.
28. **S. Aluru (PI)**, National Science Foundation, \$66,000, “CISE Postdoctoral Research Associates in Experimental Computer Science: Parallel Hierarchical Methods for Computational Electromagnetics”, Aug 2001 – Aug 2004.
29. **S. Aluru (PI)**, S. Balasubramaniam and E. Michielssen (Univ. of Illinois at Urbana-Champaign), National Science Foundation, \$397,306, “Parallel Algorithms and Software for the Steepest Descent Fast Multipole Method”, Sep 2000 – Aug 2004.
30. **S. Aluru (PI)**, SUN Academic Equipment Grant, \$86,124 “A Parallel Software System for Gene Identification and Annotation from EST Data”, Aug 2000.
31. A. Karshmer (PI), **S. Aluru (co-PI)**, M. Auguston, G. Gupta, S. Castillo, R. Hartley, R. Hills, B. Nassersharif, E. Pontelli, D. Ranjan, and J. Wiebe, National Science Foundation Minority Institution Infrastructure Award, \$1,498,343, “Dynamic and Irregular Parallelism: Its Management in Symbolic and Scientific Computing”, September 1998 – August 2003.
32. **S. Aluru (PI)**, S. Castillo and E. Johnson, National Science Foundation CISE Research Instrumentation Award, \$75,150, “Application Oriented Parallel Computing and Scientific Computing Research on a Commodity Parallel System”, December 1997 – December 1999.
33. **S. Aluru (PI)**, Sandia National Laboratories, \$35,000, “Distributed Data Structures for Parallel Scientific Computing”, October 1997 – September 1998.
34. **S. Aluru (PI)** and S. Ranka, Ballistic Missile Defense Organization, \$216,604, “Scalable Parallelization of Spatial Data Structures with Applications”, September 1997 – August 1999.
35. **S. Aluru (PI)**, Development of a program in Computational Science, ADMI Visiting Scientist Program, provides funding for an expert consultant to assist in developing a program in computational science, August 1997 – July 1998.

36. **S. Aluru (PI)**, National Science Foundation CAREER Award, \$234,999, “Parallel Algorithms and Software for Irregular Scientific Applications”, August 1997 – July 2002.
37. S. Castillo and **S. Aluru (co-PI)**, Sandia National Laboratories, \$44,625, “Development of a Complex Version of Aztec”, July 1997 – December 1997.
38. **S. Aluru (PI)**, Sandia National Laboratories, \$35,000, “Efficient Parallel Algorithms for Hierarchical N-body Methods”, October 1996 – September 1997.

University Grants

1. **S. Aluru (PI)**, J. Dickerson, K. Dorman, L. Dong, L. Jarboe, D. Nettleton, B. Nikolau, S. Pandey, A. Ramamoorthy, P.S. Schnable and J.V. Shanks, College of Engineering Dean’s Research Initiative, \$500,000, “Dean’s Research Initiative in High Throughput Computational Biology”, Apr 2011 – Mar 2014.
2. **S. Aluru (PI)**, Plant Sciences Institute Genomics Research Initiative, \$56,982, “Software Tools for Analysis of High-throughput Data from Next Generation Sequencers”, Jul 2008 – Jun 2010.
3. **S. Aluru (PI)** and S.C. Kothari, Grow Iowa Values Fund Grant Program, \$96,016, “Model-based Reasoning for Software: Advanced Algorithmic Techniques and Prototype Implementation”, Jan 2006 – May 2007.
4. **S. Aluru (PI)**, Seed funding from Information Infrastructure Institute (ICube), \$16,843, Jan 2004 – Dec 2004.
5. **S. Aluru (PI)**, Special Research Initiation Grant, “Design and Development of Rapid Access Databases for Biological Sequences”, \$16,000, Jan 2002 – Dec 2002.
6. **S. Aluru (PI)**, International Travel Grant, \$1,038, Dec 2001.
7. **S. Aluru (PI)**, Provost’s Office, Study in Second Discipline: Molecular Biology, \$15,000, Fall 2001.
8. **S. Aluru (PI)** and V. Brendel, University Research Grant, \$26,788, “Parallel Computational Methods for Gene Identification from EST Collections”, Jul 2000 – Dec 2001.
9. **S. Aluru (PI)**, International Travel Grant, \$1,125, Dec 1999.

VI. Technical Publications

Books

1. S. Aluru (Editor), *Handbook of Computational Molecular Biology*, Chapman & Hall/CRC Computer and Information Science Series, 2005 (1104 pages).
 - The Editor co-authored five chapters:
 - Pairwise Sequence Alignments (with B. Jackson)

- Look-up Tables, Suffix Trees and Suffix Arrays (with P. Ko)
 - Suffix Trees Applications in Computational Biology (with P. Ko)
 - Expressed Sequence Tags: Clustering and Applications (with A. Kalyanaraman)
 - Algorithms for Large Scale Sequence Clustering and Assembly (with S.J. Emrich and A. Kalyanaraman)
2. C.S.R. Murthy, K.N.B. Murthy, and S. Aluru, *New Parallel Algorithms for Direct Solution of Linear Equations*, John Wiley & Sons Publishing Company, October 2000.

Book Chapters

1. A. Sarje, J. Zola and S. Aluru, “Pairwise computations on the Cell processor with applications in computational biology,” In *Scientific Computing with Multicore and Accelerators*, Edited by Jack Dongarra, David A. Bader, and Jakub Kurzak, Chapman & Hall/CRC Computer and Information Science Series, Chapter 14, pp. 297-327, 2010.
2. A. Sarje and S. Aluru, “Parallel Algorithms for Alignments on the Cell Broadband Engine,” In *Emerging Parallel Architectures for Bioinformatics Applications*, Edited by B. Schmidt, Chapman & Hall/CRC Computer and Information Science Series, Chapter 4, pp. 59-84, 2010.
3. X. Yang and S. Aluru, “Comparative Genomics: Algorithms and Applications,” In *Algorithms in Computational Molecular Biology: Techniques, Approaches and Applications*, Edited by M. Elloumi and A. Zomaya, Wiley, Chapter 32 (25 pages), 2010.
4. T.M. Murali and S. Aluru, “Computational Systems Biology,” In *Algorithms and Theory of Computation Handbook. Volume II: Special Topics and Techniques*, Edited by M.J. Atallah and M. Blanton, Chapman & Hall/CRC Computer and Information Science Series, Chapter 32 (26 pages), 2009.
5. S. Aluru, “Text Indexing,” In *Encyclopedia of Algorithms*, Edited by Ming-Yang Kao, Springer, 2008.
6. S. Seal and S. Aluru, “Spatial Domain Decomposition Methods for Parallel Scientific Computing”, In *Handbook of Parallel Computing: Models, Algorithms and Applications*, Edited by S. Rajasekaran and J. Reif, Chapman & Hall/CRC Computer and Information Science Series, Chapter 44 (24 pages), 2007.
7. S. Aluru, N. Amato, D. Bader, S. Bhandarkar, L. Kale, D. Marinescu, and N. Samatovan, “Parallel Computational Biology,” In *Frontiers of Scientific Computing*, Edited by Mike Heroux, Padma Raghavan and Horst Simon, SIAM Publishing, pp. 357-378, 2006.
8. S. Aluru, “Bioinformatics,” In *Handbook of Nature-Inspired and Innovative Computing: Integrating Classical Models with Emerging Technologies*, Edited by Albert Y. Zomaya, Springer, Chapter 21, pp. 657-695, 2006.

9. S. Aluru, "Quad and Oct Trees," In Handbook of Data Structures and Applications, Edited by Dinesh P. Mehta and Sartaj Sahni, Chapman & Hall/CRC Computer and Information Science Series, Chapter 19 (26 pages), 2004.
10. S. Aluru, "Suffix Trees and Suffix Arrays," In Handbook of Data Structures and Applications, Edited by Dinesh P. Mehta and Sartaj Sahni, Chapman & Hall/CRC Computer and Information Science Series, Chapter 29 (21 pages), 2004.

Journal Articles

11. O. Nikolova, J. Zola and S. Aluru, "Parallel globally optimal structure learning of Bayesian networks," *Journal of Parallel and Distributed Computing*, Vol. 73, pp. 1039-1048, 2013.
12. A. Sarje and S. Aluru, "All-pairs computations on many-core graphics processors," *Parallel Computing*, Vol. 39, pp. 79-93, 2013.
13. X. Yang, J. Zola and S. Aluru, "Large Scale Metagenomic Sequence Clustering on Map-Reduce Clusters," *Journal of Bioinformatics and Computational Biology*, Vol. 11, No. 1, Article No. 1340001, 15 pages, 2013.
14. M. Aluru, J. Zola, D. Nettleton and S. Aluru, "Reverse engineering and analysis of large genome-scale gene networks," *Nucleic Acids Research*, Vol. 41, No. 1, pp. e24 (13 pages), doi: 10.1093/nar/gks904, 2013.
15. Y. Ronin, D. Mester, D. Minkov, R. Belotserkovski, B.N. Jackson, P.S. Schnable, S. Aluru and A. Korol, "Two-phase analysis in consensus genetic mapping," *Genes, Genomes and Genetics*, Vol. 2, No. 5, pp. 537-549, 2012.
16. X. Yang, S.P. Chockalingam and S. Aluru, "A survey of error correction methods for next generation sequencing," *Briefings in Bioinformatics*, doi: 10.1093/bib/bbs015, 11 pages, 2012.
17. S. Aluru, "Bioinformatics for next generation sequencing," *CSI Journal of Computing*, Vol. 1, No. 1, pp. 65-79, 2012.
18. M. Vikram, B. Shanker, S. Seal and S. Aluru, "A scalable parallel wideband MLFMA for efficient electromagnetic simulations on large scale clusters," *IEEE Transactions on Antennas and Propagation*, Vol. 59, No. 7, pp. 2565-2577, 2011.
19. X. Yang, S. Aluru and K. Dorman, "Repeat-aware modeling and correction of short read errors," *BMC Bioinformatics*, Vol. 12 (Suppl 1):S52 (10 pages), 2011.
20. X. Yu, L. Li, J. Zola, M. Aluru, H. Ye, A. Foudree, H. Guo, S. Anderson, S. Aluru, P. Liu, S. Rodermel and Y. Yin, "A brassinosteroid transcriptional network revealed by genome-wide identification of BES1 target genes in *Arabidopsis thaliana*," *The Plant Journal*, Vol. 65, No. 4, pp. 634-646, 2011.
21. A. Sarje, J. Zola and S. Aluru, "Accelerating pairwise computations on Cell processors," *IEEE Transactions on Parallel and Distributed Systems*, Vol. 22, No. 1, pp. 69-77, 2011.

22. X. Yang, K. Dorman and S. Aluru, "Reptile: Representative tiling for short read error correction," *Bioinformatics*, Vol. 26, No. 20, pp. 2526-2533, 2010.
23. J. Zola, M. Aluru, A. Sarje and S. Aluru, "Parallel information theory based construction of gene regulatory networks," *IEEE Transactions on Parallel and Distributed Systems*, Vol. 21, No. 12, pp. 1721-1733, 2010.
24. A. Wehe, W-C. Chang, O. Eulenstein and S. Aluru, "A scalable parallelization of the gene duplication problem," *Journal of Parallel and Distributed Computing*, Vol. 70, pp. 237-244, 2010.
25. P.S. Schnable, D. Ware, . . . , S. Aluru, R.A. Martienssen, S.W. Clifton, W.R. McCombie, R.A. Wing and R.K. Wilson, "The B73 maize genome: complexity, diversity and dynamics," *Science* (cover article), Vol. 326, Issue 5956, pp. 1112-1115, 2009.
26. F. Wei, J.C. Stein, . . . , J. Bennetzen, R. Martienssen, W.R. McCombie, S. Aluru, S.W. Clifton, P.S. Schanble, D. Ware, R.K. Wilson and R.A. Wing, "Detailed analysis of a contiguous 22-Mb region of the maize genome," *PLOS Genetics*, Vol. 5, No. 11, 16 pages, 2009.
27. A. Sarje and S. Aluru, "Parallel genomic alignments on the Cell broadband engine," *IEEE Transactions on Parallel and Distributed Systems*, Vol. 20, No. 11, pp. 1600-1610, 2009.
28. B.G. Jackson, P.S. Schnable and S. Aluru, "Parallel short sequence assembly of transcriptomes," *BMC Bioinformatics*, Vol. 10, Suppl. 1:S14, 2009.
29. D. A. Bader and S. Aluru, "Guest editorial: High-performance computational biology," *Parallel Computing*, Vol. 34, No. 11, pp. 613-615, 2008.
30. M. Ott, J. Zola, S. Aluru, A.D. Johnson, D. Janies and A. Stamatakis, "Large-scale phylogenetic analysis on current HPC architectures," *Journal of Scientific Programming* (special issue on Supercomputing 2007 best papers), Vol. 16, pp. 255-270, 2008.
31. B. Jackson, P.S. Schnable and S. Aluru, "Consensus genetic maps as median orders from inconsistent sources," *ACM/IEEE Transactions on Computational Biology and Bioinformatics*, Vol. 5, No. 2, pp. 161-171, 2008.
32. A. Kalyanaraman, S.J. Emrich, P.S. Schnable and S. Aluru, "Assembling genomes on large-scale parallel computers," *Journal of Parallel and Distributed Computing* (special issue on IPDPS 2006 best papers), Vol. 67, pp. 1240-1255, 2007.
33. S.J. Emrich, L. Li, T.-J. Wen, M.D. Yandeu-Nelson, Y. Fu, L. Guo, H.-H. Chou, S. Aluru, D.A. Ashlock and P.S. Schanble, "Nearly identical paralogs (NIPs): implications for maize (*Zea mays* L.) genome evolution," *Genetics*, Vol. 175, pp. 429-439, 2007. (featured in *Science*, Vol. 315, No. 5810, pp. 302 in Editor's Choice: Highlights of the recent literature)
34. S. Aluru, N. Amato and D.A. Bader, "Editorial: Special section on high performance computational biology," *IEEE Transactions on Parallel and Distributed Systems*, Vol. 17, No. 8, pp. 737-740, 2006.

35. A. Kalyanaraman and S. Aluru, "Efficient algorithms and software for detection of full-length LTR retrotransposons," *Journal of Bioinformatics and Computational Biology*, Vol. 4, No. 2, pp. 197-216, 2006.
36. R. Sangireddy, N. Futamura, S. Aluru and A.K. Somani, "Scalable, memory efficient, high-speed lookup and update algorithms for IP routing," *ACM/IEEE Transactions on Networking*, Vol. 13, No. 4, pp. 802-812, 2005.
37. Y. Fu, S.J. Emrich, L. Guo, T.J. Wen, D. Ashlock, S. Aluru, and P.S. Schnable, "Quality assessment of maize assembled genomic islands (MAGIs) and large-scale experimental verification of predicted novel genes," *Proceedings of the National Academy of Sciences USA*, Vol. 102, No. 34, pp. 12282-12287, 2005.
38. B. Hariharan and S. Aluru, "Efficient parallel algorithms and software for compressed octrees with applications to hierarchical methods," *Parallel Computing*, Vol. 31, pp. 311-331, 2005.
39. P. Ko and S. Aluru, "Space efficient linear time construction of suffix arrays," *Journal of Discrete Algorithms*, Vol. 3, No. 2-4, pp. 143-156, 2005.
40. S. Seal, S. Komarina and S. Aluru, "An optimal hierarchical clustering algorithm for gene expression data," *Information Processing Letters*, Vol. 93, No. 3, pp. 143-147, 2005.
41. F. Sevilgen, S. Aluru and N. Futamura, "Parallel algorithms for tree accumulations," *Journal of Parallel and Distributed Computing*, Vol. 65, No.1, pp. 85-93, 2005.
42. S. Rajko and S. Aluru, "Space and time optimal parallel sequence alignments," *IEEE Transactions on Parallel and Distributed Systems*, Vol. 15, No. 12, pp. 1070-1081, 2004.
43. M. Mitreva, A.A. Elling, M. Dante, A.P. Kloek, A. Kalyanaraman, S. Aluru, S.W. Clifton, D.McK. Bird, T.J. Baum and J.P. McCarter, "A survey of SL1-spliced transcripts from the root-lesion nematode *Pratylenchus penetrans*," *Molecular Genetics and Genomics*, Vol. 272, pp. 138-148, 2004.
44. D.A. Bader and S. Aluru, "Special issue: High performance computational biology," *Concurrency and Computation: Practice and Experience*, Vol. 16, No. 9, pp. 817-821, 2004.
45. S.J. Emrich, S. Aluru, Y. Fu, T.J. Wen, M. Narayanan, L. Guo, D.A. Ashlock, and P.S. Schnable, "A Strategy for Assembling the Maize (*Zea mays* L.) Genome," *Bioinformatics*, Vol. 20, No. 2, pp. 140-147, 2004.
46. N. Futamura, S. Aluru and X. Huang, "Parallel syntenic alignments," *Parallel Processing Letters*, Vol. 13, No. 4, pp. 689-703, 2003.
47. A. Kalyanaraman, S. Aluru, V. Brendel and S. Kothari, "Space and time efficient parallel algorithms and software for EST clustering," *IEEE Transactions on Parallel and Distributed Systems*, Vol. 14, No. 12, pp. 1209-1221, 2003.
48. X. Huang, J. Wang, S. Aluru, S.P. Yang and L. Hillier, "PCAP: A whole-genome assembly program," *Genome Research*, Vol. 13, pp. 2164-2170, 2003.

49. S. Aluru and D.A. Bader, "Guest editors' introduction: Special issue on high performance computational biology," *Journal of Parallel and Distributed Computing*, Vol. 63, No. 7-8, pp. 671-673, 2003.
50. A. Kalyanaraman, S. Aluru, S. Kothari, and V. Brendel, "Efficient clustering of large EST data sets on parallel computers," *Nucleic Acids Research*, Vol. 31, No. 11, pp. 2963-2974, 2003.
51. S. Aluru, N. Futamura and K. Mehrotra, "Parallel biological sequence comparison using prefix computations," *Journal of Parallel and Distributed Computing*, Vol. 63, No. 3, pp. 264-272, 2003.
52. N. Futamura, S. Aluru, D. Ranjan and B. Hariharan, "Efficient parallel algorithms for solvent accessible surface area of proteins," *IEEE Transactions on Parallel and Distributed Systems*, Vol. 13, No. 6, pp. 544-555, 2002.
53. I. Al-furaih, S. Aluru, S. Goil and S. Ranka, "Parallel construction of multidimensional binary search trees," *IEEE Transactions on Parallel and Distributed Systems*, Vol. 11, No. 2, pp. 136-148, 2000.
54. S. Aluru, G.M. Prabhu, J. Gustafson and F. Sevilgen, "Distribution-independent hierarchical algorithms for the N-body problem," *Journal of Supercomputing*, Vol. 12, pp. 303-323, 1998.
55. S. Aluru, "Lagged Fibonacci random number generators for distributed memory parallel computers," *Journal of Parallel and Distributed Computing*, Vol. 45, No. 1, pp. 1-12, 1997.
56. I. Al-furaih, S. Aluru, S. Goil and S. Ranka, "Practical algorithms for selection on coarse-grained parallel computers," *IEEE Transactions on Parallel and Distributed Systems*, Vol. 8, No. 8, pp. 313-324, 1997.
57. J. Gustafson and S. Aluru, "Massively parallel searching for better algorithms or how to do a cross product in five multiplications," *Journal of Scientific Programming*, pp. 203-217, 1996.
58. S. Aluru, "Greengard's N-body Algorithm is not Order N," *SIAM Journal on Scientific Computing*, Vol. 17, No. 3, pp. 773-776, 1996.
59. S. Aluru, G.M. Prabhu and J. Gustafson, "A random number generator for parallel computers," *Parallel Computing*, Vol. 18, pp. 839-847, 1992.

Refereed Conference Publications

60. R. Nihalani, J. Zola and S. Aluru, "Resolving read assignment ambiguities in metagenomic clustering," *Proc. 5th International Conference on Bioinformatics and Computational Biology (BICoB)*, 2013.
61. O. Nikolova and S. Aluru, "Parallel Bayesian network structure learning with application to gene networks," *Proc. ACM/IEEE Supercomputing Conference (SC)*, 13 pages, 2012. (21% acceptance rate)

62. A. Shah, S. Chockalingam and S. Aluru, "A parallel algorithms for spectrum-based short read error correction," *Proc. 26th International Parallel and Distributed Processing Symposium (IPDPS)*, pp. 60-70, 2012. (21% acceptance rate)
63. X. Yang, F. Sikora, G. Blin, S. Hamel, R. Rizzi and S. Aluru, "An algorithmic view on multi-related-segments: A unifying model for approximate common interval," *Proc. 9th annual conference on Theory and Applications of Models of Computation (TAMC)*, Springer-Verlag *Lecture Notes in Bioinformatics*, Vol. 7287, pp. 319-329, 2012.
64. O. Nikolova and S. Aluru, "Parallel discovery of direct causal relations and Markov blankets with applications to gene networks," *Proc. 40th International Conference on Parallel Processing (ICPP)*, pp. 512-521, 2011. (22% acceptance rate)
65. X. Yang, J. Zola and S. Aluru, "Parallel metagenomic sequence clustering via sketching and quasi-clique enumeration on map-reduce clouds," *Proc. 25th International Parallel and Distributed Processing Symposium (IPDPS)*, pp. 1223-1233, 2011. (20% acceptance rate)
66. A. Varma, A. Ranade and S. Aluru, "An improved maximum likelihood formulation for accurate genome assembly," *Proc. 1st IEEE International Conference on Computational Advances in Bio and medical Sciences (ICCBS)*, pp. 165-170, 2011. (43% acceptance rate)
67. X. Yang, S. Aluru and K. Dorman, "Repeat-aware modeling and correction of short read errors," *Proc. 9th Asia Pacific Bioinformatics Conference (APBC)*, 2011. (30% acceptance rate)
68. A. Sarje and S. Aluru, "A MapReduce style framework for computations on trees with applications to k-nearest neighbors and FMM simulations," *Proc. 39th International Conference on Parallel Processing (ICPP)*, pp. 343-352, 2010.
69. B. Jackson, M. Regennitter, X. Yang, P.S. Schnable and S. Aluru, "Parallel *de novo* assembly of large genomes from high-throughput short reads," *Proc. 24th International Parallel and Distributed Processing Symposium (IPDPS)*, 2010, 15 pages. (24% acceptance rate)
70. X. Yang and S. Aluru, "An improved model for gene cluster inference," *Proc. ISCA International Conference on Bioinformatics and Computational Biology (BiCoB)*, pp. 190-195, 2010.
71. O. Nikolova, J. Zola and S. Aluru, "A parallel algorithm for exact Bayesian structure inference," *Proc. 16th International Conference on High Performance Computing (HiPC)*, pp. 342-349, 2009. (19% acceptance rate)
72. J. Zola, A. Sarje and S. Aluru, "Constructing gene regulatory networks on clusters of Cell processors," *Proc. 38th International Conference on Parallel Processing (ICPP)*, pp. 108-115, 2009. (30% acceptance rate)
73. M. Vikram, B. Shanker and S. Aluru, "Provably scalable parallel FMM algorithm for multiscale electromagnetic simulations," *Proc. Antennas and Propagation Society International Symposium (APSURSI)*, 4 pages, 2009.

74. M. Vikram, A. Baczewski, B. Shanker and S. Aluru, "Parallel accelerated Cartesian expansions for particle dynamics simulations," *Proc. International Parallel and Distributed Processing Symposium (IPDPS)*, 11 pages, 2009. (23% acceptance rate)
75. B.G. Jackson, P.S. Schanble and S. Aluru, "Assembly of large genomes from paired short reads," *Proc. 1st ISCA International Conference on Bioinformatics and Computational Biology (BiCOB)*, Springer-Verlag Lecture Notes in Bioinformatics, Vol. 5462, pp. 30-43, 2009. (invited paper)
76. B.G. Jackson, P.S. Schnable and S. Aluru, "Parallel short sequence assembly of transcriptomes," *Proc. 7th Asia Pacific Bioinformatics Conference (APBC)*, pp. 141-152, 2009. (37% acceptance rate)
77. J. Zola, M. Aluru and S. Aluru, "Parallel information theory based construction of gene regulatory networks," *Proc. 15th International Conference on High Performance Computing (HiPC)*, Springer-Verlag Lecture Notes in Computer Science, Vol. 5374, pp. 336-349, 2008. (15% acceptance rate)
78. A. Janowczyk, S. Chandran and S. Aluru, "Fast, processor-cardinality agnostic PRNG with a tracking application," *6th Proc. Indian Conference on Computer Graphics, Vision and Image Processing*, pp. 171-178, 2008.
79. S. Seal, M. Moody, A. Ceguerra, S. Ringer, K. Rajan and S. Aluru, "Tracking nanostructural evolution in alloys: Large-scale analysis of atom probe tomography data on Blue Gene/L," *Proc. 37th International Conference on Parallel Processing (ICPP)*, pp. 338-345, 2008. (31% acceptance rate)
80. B.G. Jackson and S. Aluru, "Parallel construction of bidirected string graphs for genome assembly," *Proc. 37th International Conference on Parallel Processing (ICPP)*, pp. 346-353, 2008. (31% acceptance rate)
81. A. Sarje and S. Aluru, "Parallel biological sequence alignments on the Cell broadband engine," *Proc. 22nd IEEE International Parallel and Distributed Processing Symposium (IPDPS)*, pp. 1-11, 2008. (26% acceptance rate)
82. M. Ott, J. Zola, S. Aluru and A. Stamatakis, "Large-scale maximum likelihood-based phylogenetic analysis on the IBM Blue Gene/L," *Proc. ACM/IEEE Supercomputing Conference (SC)*, 2007. (20% acceptance rate; best paper finalist).
83. P. Ko and S. Aluru, "Optimal self-adjusting suffix tree layout for dynamic string data in secondary storage," *Proc. 14th Symposium on String Processing and Information Retrieval (SPIRE)*, Springer Verlag Lecture Notes in Computer Science, Vol. 4726, pp. 184-194, 2007. (35% acceptance rate)
84. J. Zola, X. Yang, A. Rospondek and S. Aluru, "Parallel-TCoffee: A parallel multiple sequence aligner," *Proc. ISCA Parallel and Distributed Computing Systems (PDCS)*, pp. 248-253, 2007.

85. S. Emrich, A. Kalyanaraman and S. Aluru, "Massively parallel expressed sequence tag clustering," *Proc. ISCA Parallel and Distributed Computing Systems (PDCS)*, pp. 254-261, 2007.
86. S. Seal and S. Aluru, "Communication-aware parallel domain decomposition using space filling curves," *Proc. ISCA 19th International Conference on Parallel and Distributed Computing Systems (PDCS)*, pp. 159-164, 2006. (45% acceptance rate)
87. A. Kalyanaraman, S. Aluru and P.S. Schnable, "Turning repeats to advantage: scaffolding genomic contigs using LTR retrotransposons," *Proc. Life Sciences Society Computational Systems Bioinformatics (CSB) Conference*, pp. 167-178, 2006. (19% acceptance rate)
88. S. Tirthapura, S. Seal and S. Aluru, "A formal analysis of space filling curves for parallel domain decomposition," *Proc. International Conference on Parallel Processing (ICPP)*, pp. 505-512, 2006. (32% acceptance rate)
89. P. Ko and S. Aluru, "Obtaining provably good performance from suffix trees in secondary storage," *Proc. Combinatorial Pattern Matching (CPM) Conference, Springer-Verlag Lecture Notes in Computer Science, Vol. 4009*, pp. 72-83, 2006. (38% acceptance rate)
90. A. Kalyanaraman, S.J. Emrich, P.S. Schnable and S. Aluru, "Assembling Genomes on Large-Scale Parallel Computers", *Proc. 20th IEEE International Parallel and Distributed Processing Symposium (IPDPS)*, 2006. (23% acceptance rate; best paper award)
91. Z. Shen, S. Aluru and S. Tirthapura, "Indexing for subscription covering in publish-subscribe systems," *Proc. ISCA 18th International Conference on Parallel and Distributed Computing Systems (PDCS)*, pp. 328-333, 2005.
92. B. Jackson, S. Aluru and P.S. Schnable, "Consensus Genetic Maps: A Graph Theoretic Approach," *Proc. IEEE Computational Systems Bioinformatics (CSB) Conference*, pp. 35-43, 2005. (12% acceptance rate)
93. A. Kalyanaraman and S. Aluru, "Efficient Algorithms and Software for Detection of Full-length LTR Retrotransposons," *Proc. IEEE Computational Systems Bioinformatics (CSB) Conference*, pp. 56-64, 2005. (12% acceptance rate; best paper award)
94. S. Aluru and F.E. Sevilgen, "Efficient Methods for Database Storage and Retrieval Using Space-filling Curves," *Proc. 19th International Symposium on Computer and Information Sciences, Spring Verlag Lecture Notes in Computer Science, Vol. 3280*, pp. 503-512, 2004. (31% acceptance rate)
95. P. Ko, M. Narayanan, A. Kalyanaraman, and S. Aluru, "Space-conserving optimal DNA-protein alignment," *Proc. IEEE Computational Systems Bioinformatics Conference*, pp. 80-88, 2004. (21% acceptance rate)
96. M.S. Wu, R.A. Kendall, and S. Aluru, "Exploring collective communications on a cluster of SMPs," *Proc. IEEE International Conference on High Performance Computing - Asia*, pp. 114-117, 2004. (62% acceptance rate)

97. M.S. Wu, R.A. Kendall, and S. Aluru, "A tunable collective communication framework on cluster of SMPs," *Proc. IASTED International Conference on Parallel and Distributed Computing and Networks*, 2004. (58% acceptance rate)
98. S.J. Emrich, S. Aluru, Y. Fu, T.J. Wen, M. Narayanan, L. Guo, D.A. Ashlock, and P.S. Schnable, "A strategy for assembling the maize genome," *Plant and Animal Genomes Conference Bioinformatics Workshop*, 2004. (28% acceptance rate)
99. N. Futamura, R. Sangireddy, S. Aluru and A. Somani, "Scalable, memory efficient, high-speed lookup and update algorithms for IP routing," *Proc. 12th International Conference on Computer Communications and Networks*, pp. 257-263, 2003. (31% acceptance rate)
100. S. Rajko and S. Aluru, "Space and time optimal parallel sequence alignment," *Proc. International Conference on Parallel Processing*, pp. 39-47, 2003. (36% acceptance rate)
101. S. Aluru, "Computational biology on parallel computers," *European Controls Conference*, 2003.
102. P. Ko and S. Aluru, "Space-efficient linear time construction of suffix arrays," *Proc. Combinatorial Pattern Matching*, pp. 200-210, 2003. (49% acceptance rate)
103. N. Futamura, S. Aluru and X. Huang, "Parallel Syntenic Alignments," *Proc. 9th IEEE International Conference on High Performance Computing (HiPC)*, pp. 420-430, 2002. (39% acceptance rate)
104. B. Hariharan, S. Aluru and B. Shanker, "A scalable parallel fast multipole method for analysis of scattering from perfect electrically conducting surfaces," *Proc. IEEE/ACM Supercomputing Conference*, www.sc-2002.org, 2002. (29% acceptance rate)
105. M.S. Wu, S. Aluru and R.A. Kendall, "Mixed mode matrix multiplication," *Proc. IEEE International Conference on Cluster Computing*, pp. 195-203, 2002.
106. A. Kalyanaraman, S. Aluru and S. Kothari, "Space and time efficient parallel algorithms and software for EST clustering," *Proc. 31st International Conference on Parallel Processing*, pp. 331-339, 2002. (36% acceptance rate)
107. A. Kalyanaraman, S. Aluru and S. Kothari, "Parallel EST clustering," *First International Workshop on High Performance Computational Biology (HiCOMB)*, In *Proc. IEEE International Parallel and Distributed Processing Symposium (IPDPS)*, pp. 185-192, 2002. (60% acceptance rate)
108. B. Hariharan and S. Aluru, "Efficient parallel algorithms and software for compressed octrees with application to hierarchical methods," *Proc. 8th IEEE International Conference on High Performance Computing (HiPC)*, *Spring Verlag Lecture Notes in Computer Science*, pp. 125-136, 2001. (27% acceptance rate)
109. N. Futamura, S. Aluru and S. Kurtz, "Parallel suffix sorting," *Proc. 9th International Conference on Advanced Computing and Communications*, pp. 76-81, 2001. (33% acceptance rate for regular papers)

110. N. Futamura, S. Aluru, D. Ranjan and K. Mehrotra, "Efficient algorithms for protein solvent accessible surface area," *Proc. IEEE International Conference on High Performance Computing – Asia*, 2000. (30% acceptance rate for regular papers)
111. F. Sevilgen, S. Aluru and N. Futamura, "A provably optimal, distribution-independent, parallel fast multipole method," *Proc. 14th IEEE International Parallel and Distributed Processing Symposium (IPDPS)*, pp. 77-84, 2000. (35% acceptance rate)
112. S. Aluru, N. Futamura and D. Ranjan, "A parallel Monte Carlo algorithm for protein accessible surface area computation," *Proc. 6th IEEE International Conference on High Performance Computing (HiPC), Springer Verlag Lecture Notes in Computer Science*, vol. 1745, pp. 339-348, 1999. (18% acceptance rate for regular papers)
113. S. Aluru and F. Sevilgen, "Dynamic compressed hyperoctrees with application to the N-body problem," *Proc. 19th International Conference on Foundations of Software Technology and Theoretical Computer Science (FSTTCS), Springer Verlag Lecture Notes in Computer Science*, vol. 1738, pp. 21-33, 1999. (36% acceptance rate)
114. F. Sevilgen and S. Aluru, "A unifying data structure for hierarchical methods," *Proc. IEEE/ACM Supercomputing Conference (SC)*, <http://www.supercomp.org/sc99>, 1999. (29% acceptance rate)
115. F. Sevilgen, S. Aluru and N. Futamura, "Distributed memory tree accumulations," *Proc. Parallel and Distributed Computing Systems*, pp. 389-395, 1999. (46% acceptance rate)
116. K.N.B. Murthy and S. Aluru, "Bidirectional division-free Gaussian elimination algorithm for solving linear equations," *Proc. Parallel and Distributed Computing Systems*, pp. 520-527, 1999. (46% acceptance rate)
117. S. Aluru and S. Maneewongvatana, "A practical parallel algorithm for line segment visibility," *Proc. Parallel and Distributed Processing Technology and Applications*, vol. III, pp. 1676-1682, 1999. (28% acceptance rate)
118. S. Aluru, N. Futamura and K. Mehrotra, "Biological sequence comparison using prefix computations," *Proc. 13th IEEE International Parallel Processing Symposium (IPPS)*, pp. 653-659, 1999. (45% acceptance rate)
119. S. Aluru and F. Sevilgen, "Parallel domain decomposition and load balancing using space-filling curves," *Proc. 4th IEEE International Conference on High Performance Computing (HiPC)*, pp. 230-235, 1997. (57% acceptance rate)
120. S. Goil, S. Aluru and S. Ranka, "Concatenated parallelism: a technique for efficient parallel divide and conquer," *8th IEEE Symposium on Parallel and Distributed Processing (SPDP)*, pp. 488-495, 1996. (39% acceptance rate)
121. S. Aluru and S. Maneewongvatana, "Practical parallel algorithms for constructing line arrangements," *Proc. International Conference on Parallel and Distributed Processing Techniques and Applications*, pp. 125-135, 1996.

122. S. Aluru, "Parallel additive lagged Fibonacci random number generators," *Proc. 10th ACM International Conference on Supercomputing (ICS)*, pp. 102-108, 1996. (43% acceptance rate)
123. I. Al-furaih, S. Aluru, S. Goil and S. Ranka, "Parallel construction of multidimensional binary search trees," *Proc. 10th ACM International Conference on Supercomputing (ICS)*, pp. 205-212, 1996. (43% acceptance rate)
124. I. Al-furaih, S. Aluru, S. Goil and S. Ranka, "Practical algorithms for selection on coarse-grained parallel computers," *Proc. 10th IEEE International Parallel Processing Symposium (IPPS)*, pp. 309-313, 1996. (36% acceptance rate)
125. I. Al-furaih, S. Aluru, S. Goil and S. Ranka, "Parallel construction of k-d tree and related problems," *Proc. 2nd Workshop on Solving Irregular Problems on Distributed Memory Machines*, 1996.
126. S. Aluru, "Properties of binomial coefficients and implications to parallelizing lagged Fibonacci random number generators," *Proc. International Conference on Parallel Processing*, pp. 25-28, 1995. (28% acceptance rate)
127. S. Aluru, G.M. Prabhu and J. Gustafson, "Truly distribution-independent algorithms for the N-body problem," *Proc. IEEE/ACM Supercomputing Conference*, pp. 420-428, 1994.
128. S. Aluru and J. Gustafson, "Subtle issues of SIMD tree search," *Proc. Parallel Computing, in Parallel Computing: Trends and Applications, Elsevier Publishers*, pp. 49-56, 1993.
129. S. Aluru and J. Gustafson, "A massively parallel optimizer for expression evaluation," *Proc. 7th ACM International Conference on Supercomputing*, pp. 97-106, 1993.
130. S. Aluru and G.M. Prabhu, "Random number generation for parallel computers," *Proc. NATO Advanced Study Institute on Parallel Computing on Distributed Memory Multiprocessors*, pp. 315-320, 1991.

Software

1. PARABLE (with O. Nikolova), Parallel Bayesian Learning software for large-scale Bayesian networks.
2. TINGe (with J. Zola and M. Aluru), Tool for Inferring Network of Genes. Parallel software for inferring gene networks from multiple microarray experiments. Scales to whole genome networks and thousands of experiments.
3. GeNA (with J. Zola and M. Aluru), Gene Network Analyzer. Software for extracting context-specific biological subnetworks from whole genome networks, using seeds genes from partially characterized pathways.
4. ParaBayL (with O. Nikolova and J. Zola), Parallel software for exact Bayesian Network Structure Learning.

5. Parallel Reptile (with A. Shan and S. Chockalingam), Parallel software for error correction of next-gen DNA sequences, particularly for Illumina.
6. Reptile (with X. Yang and K. Dorman), Software for error correction of next-gen DNA sequences, particularly for Illumina.
7. Redeem (with X. Yang and K. Dorman), Software for error correction of reads from repeat-rich genomes, targeted for Illumina.
8. PaCE, Parallel Clustering of Expressed sequenced tags (with A. Kalyanaraman). Bioinformatics software that clusters large collections of DNA sequences based on sequence similarity. Runs on multiprocessor systems and can handle large scale problems in clustering and assembly of DNA sequences.
9. LTR-Par (with A. Kalyanaraman). Software for identifying long terminal repeat retrotransposons in genomic sequences. This software can be used to explore large-scale genomes for retrotransposons and has been successfully used for the Chimpanzee genome.
10. Software for generating consensus genetic maps from individual genetic maps of the same species. Produces output to enable visualization using graph drawing software.
11. Parallel-TCoffee (with J. Zola). Parallelization of the popular Toffee multiple sequence alignment software. It can easily align thousands of sequences.
12. PanDA, Protein and DNA alignment software (with P. Ko, M. Narayanan, and A. Kalyanaraman). The software models the DNA-Protein alignment problem as a combinatorial optimization problem and computes an optimal solution. It can be used for gene annotation and finding the structure of genes.

VII. Invited Presentations

1. Reverse engineering and analysis of genome-scale gene networks, Plenary talk at the *9th International Conference on Genome Biology and Bioinformatics*, Atlanta, Georgia, November 7, 2013.
2. Large-scale metagenomic clustering via quasi-clique enumeration and read assignment ambiguity resolution, Invited talk at the *First International Workshop on Big Data in Life Sciences*, New Orleans, Louisiana, June 13, 2013.
3. Parallel methods for Bayesian network structure learning, Keynote at the *Workshop on Parallel and Distributed Computing for Machine Learning and Inference Problems (ParLearning)*, Boston, Massachusetts, May 24, 2013.
4. Genomes galore: Bigdata challenges in the biosciences, Keynote at the *41st International Conference on Parallel Processing*, Pittsburgh, Pennsylvania, September 13, 2012.
5. Bigdata Analytics for Next Generation Sequencing, Life Technologies Corporation, Foster City, California, August 20, 2012.

6. BLiSS: A Library Proposal for NGS Analytics, DOE ICiS Summer Workshop on Developing a Next Generation Systems Analysis Library, Park City, Utah, July 28 – Aug 4, 2012.
7. The new era in genomics: Opportunities and challenges for high performance computing, Computer and Information Science and Engineering Department, University of Florida, April 13, 2012.
8. Improving NGS data quality through error correction algorithms, *Genome Sequencing and Annotation Symposium*, University of Florida, April 12, 2012.
9. The new era in genomics: Opportunities and challenges for high performance computing, Computational Science and Engineering Distinguished Lecture, Georgia Institute of Technology, Atlanta, Georgia, March 9, 2012.
10. Reverse engineering whole-genome networks, *2nd IEEE International Conference on Computational Advances in Bio and Medical Sciences (ICCBMS)*, Las Vegas, February 24, 2012.
11. Taxonomic clustering of large-scale metagenomic data, *2nd Workshop on Computational Advances for Next Generation Sequencing (CANGS)*, Las Vegas, February 24, 2012.
12. Assembling complex genomes: Experiences from maize B73 sequencing, Monsanto Corporation, Bengaluru, India, December 20, 2011.
13. Parallel graph algorithmic challenges in high-throughput sequence assembly, *Workshop on parallel algorithms and software for analysis of massive graphs (ParGraph)*, held in conjunction with *18th International Conference on High Performance Computing*, Bengaluru, India, December 17, 2011.
14. Challenges in experimental design and algorithm development for high-throughput data analysis, *1st Global Cancer Genomics Consortium Symposium*, Tata Memorial Cancer Center, Mumbai, India, November 11, 2011.
15. Reverse engineering whole-genome networks using high performance parallel computers, *2nd Conference on Systems Biology and New Sequencing Techniques*, International Center for Theoretical Physics, Trieste, Italy, November 3, 2011.
16. The new era in genomics: Opportunities and challenges for next generation systems, *IBM Centennial Colloquium and IBM Collaborative Academia Research Exchange (I-CARE)*, New Delhi, India, October 13, 2011.
17. Error correction algorithms for next-generation sequencing, *NSF Workshop on Next-generation Sequencing Technology and Algorithms for Primary Data Analysis*, Institute for Physical and Applied Mathematics, University of California Los Angeles, Los Angeles, California, October 4, 2011.
18. Bioinformatics for next-gen sequencing: Error correction and genome assembly, Institute for Genomics and Integrative Biology, New Delhi, India, September 6, 2011.
19. Reverse engineering whole-genome networks, *26th International Supercomputing Conference (ISC)*, Hamburg, Germany, June 23, 2011.
20. Flexible read decomposition for improved short read error correction, *DTRA/NSF workshop on Algorithms for Threat Detection*, Boston, Massachusetts, June 7, 2011.

21. Next-gen sequencing: Data intensive computing in the biosciences, Dept. of Computer Science, Rice University, May 11, 2011.
22. Next-generation sequencing, Minisymposium on Combinatorial Methods in Applications of CSE, *SIAM Conference on Computational Science and Engineering (CSE)*, Reno, Nevada, February 28, 2011.
23. Next-gen sequencing: Data intensive computing in the biosciences, International Center for Theoretical Science, Bangaluru, India, February 9, 2011.
24. Flexible read decomposition for short read error correction, *1st IEEE International Conference on Computational Advances in Bio and Medical Sciences (ICCBMS)*, Orlando, Florida, February 4, 2011.
25. Why should computer science students work in life sciences?, Student Research Symposium, *1st International Conference on High Performance Computing (HiPC)*, Goa, India, December 19, 2010.
26. The new era in genomics: Opportunities and challenges for high performance computing, IBM T.J. Watson Research Center, Yorktown Heights, New York, May 19, 2010.
27. The new era in genomics: Opportunities and challenges for high performance computing, keynote talk at the *24th IEEE International Parallel and Distributed Processing Symposium (IPDPS)*, Atlanta, Georgia, April 21, 2010.
28. De novo Assembly of Large Genomes from Paired Short Reads, Dept. of Computer Science, Brigham Young University, Provo, Utah, March 4, 2010.
29. The new era in computational genomics: Opportunities and challenges for high performance computing, distinguished lecture, Dept. of Computer Science, Texas A&M University, College Station, Texas, February 16, 2010.
30. Parallel assembly of large genomes from paired short reads, invited talk at High Performance Computing workshop, Dept. of Energy (DoE) Joint Genome Institute (JGI), January 25, 2010.
31. Parallel assembly of large genomes from paired short reads, invited talk at *IEEE International Conference on Bioinformatics and Biomedicine (BIBM)*, Washington D.C., November 2, 2009.
32. Parallel assembly of large genomes from paired short reads, School of Technology and Computer Science, Tata Institute of Fundamental Research, October 26, 2009.
33. Parallel assembly of genomes from paired short reads, keynote talk at the *8th International Conference on Parallel Processing and Applied Mathematics*, Wroclaw, Poland, September 16, 2009.
34. Assembling large genomes from paired short reads, invited talk at the *1st International Conference on Bioinformatics and Computational Biology*, New Orleans, Louisiana, April 9, 2009.
35. Systems biology on a Cell cluster: Constructing gene regulatory networks, invited talk at the *Workshop on Supercomputing, Multicore Architectures and Biomedical Informatics at 21st ACM/IEEE Supercomputing Conference (SC)*, November 17, 2008.

36. Consensus genetic maps: A graph theoretic approach, Chalmers Institute of Technology, Goteborg, Sweden, October 16, 2008.
37. Systems biology on a cell cluster: Constructing gene regulatory networks, Chalmers Institute of Technology, Goteborg, Sweden, October 13, 2008.
38. The combinatorics of sequencing the corn genome, keynote talk at the *1st International Conference on Contemporary Computing (ICCC)*, New Delhi, India, August 9, 2008.
39. The combinatorics of sequencing the corn genome, keynote talk at the *13th Annual International Computing and Combinatorics Conference (COCOON)*, Alberta, Canada, July 16, 2007.
40. Parallel methods in computational genomics, *First Bertinoro Systems Biology Workshop*, Bertinoro, Italy, May 2007.
41. Assembling the maize genome on large-scale parallel computers, Diamond Jubilee Conference of the Indian Society of Agricultural Statistics, New Delhi, India, Dec 28, 2006.
42. Parallel methods in computational biology, Supercomputing Education and Research Center, Indian Institute of Science (IISc), Bangalore, India, Dec 15, 2006.
43. Bioinformatics: Past accomplishments and future challenges, Kanwal Rekhi School of Information Technology, Indian Institute of Technology (IIT) Mumbai, September 28, 2006.
44. Parallel methods for maize genome assembly, College of Computing, Georgia Institute of Technology, Atlanta, Georgia, March 29, 2006.
45. Parallel methods for maize genome assembly, Workshop on Algorithms, Indian Statistical Institute, Kolkata, India, December 16, 2005.
46. New techniques for parallel solution of irregular problems, Workshop on Algorithms, Indian Statistical Institute, Kolkata, India, December 16, 2005.
47. Maize genome assembly on the IBM BlueGene/L Supercomputer, IBM T.J. Watson Research Center, New York, June 22, 2005.
48. Parallel methods for maize genome assembly, University of Memphis, Memphis, Tennessee, April 26, 2005.
49. Parallel methods for maize genome assembly, Advanced Techology Center, Tata Consultancy Services, Hyderabad, India, January 6, 2005.
50. Parallel methods for maize genome assembly, Kanwal Rekhi School of Information Technology, IIT Mumbai, December 27, 2004.
51. Maize genome assembly on the IBM BlueGene/L, IBM Global Services, Bangalore, India, December 23, 2004.
52. Parallel Methods in Computational Genomics, Coordinated Laboratory for Computational Genomics, University of Iowa, Iowa City, November 29, 2004.
53. High-performance computing for Maize genome assembly, *SIAM minisymposium on Parallel Computational Biology*, San Francisco, February, 2004.
54. Is the problem irregular? Or, do we need better algorithms?, *SIAM minisymposium on Combinatorial Algorithms and Parallel Computing*, San Francisco, February, 2004.

55. Parallel EST clustering, Department of Computer Science and Engineering, Indian Institute of Technology, Kanpur, India, January 2, 2003.
56. Parallel EST clustering, IBM Global Services, Bangalore, India, December 19, 2002.
57. Parallel EST clustering, Supercomputing Education and Research Center, Indian Institutes of Science, Bangalore, India, December 16, 2002.
58. Linear time suffix sorting, Department of Electrical Engineering and Computer Science, Syracuse University, Syracuse, New York, November 4, 2002.
59. Parallel EST clustering, National Center for Biotechnology Information, National Institutes of Health, Bethesda, Maryland, June 13, 2002.
60. Parallel EST clustering, Second Joint ISU/U of I symposium on Bioinformatics and Computational Biology, Ames, Iowa, April 6, 2002.
61. New techniques for parallel solution of irregular problems, *Fourth International Conference on Information Technology*, Gopalapur-on-Sea, Orissa, India, December 22, 2001.
62. Parallel algorithms and software systems for computational biology, IBM T.J. Watson Center, June 5, 2001.
63. Opportunities and challenges in computational biology, 6hr tutorial presentation, Syracuse University, Syracuse, New York, March 23-24, 2001.
64. A distribution-independent framework for scientific applications, Department of Computer Science, University of Iowa, Iowa City, Iowa, March 6, 2001.
65. A distribution-independent framework for scientific applications, Department of Electrical and Computer Engineering, Northwestern University, Evanston, Illinois, April 24, 2000.
66. Parallel processing for computational biology, Iowa Computational Biology Laboratory, Ames, Iowa, November 1, 1999.
67. Cluster computing, Department of Physics, New Mexico State University, Las Cruces, New Mexico, May 7, 1999.
68. A distribution independent framework for scientific applications, Department of Computer Science and Engineering, Indian Institute of Technology, Chennai, India, December 15, 1998.
69. Dynamic compressed hyperoctrees with applications, Department of Computer Science, Iowa State University, Ames, Iowa, September 10, 1998.
70. Dynamic compressed hyperoctrees with applications, Department of Computer Science and Engineering, University of Florida, Gainesville, Florida, June 8, 1998.
71. Panelist, "Parallel systems across industry, academia, and the national laboratories", Rio Grande ACM meeting, El Paso, Texas, March 27, 1998.
72. Distribution-independent organization of spatial data with applications to parallel and scientific computing, Sandia National Laboratories, Albuquerque, New Mexico, May 21, 1997.
73. Space-filling curves for arbitrary and dynamic points with applications, Los Alamos National Laboratories, Los Alamos, New Mexico, April 21, 1997.

74. Distribution-independent organization of spatial data with applications to parallel and scientific computing, Los Alamos National Laboratories, Los Alamos, New Mexico, April 21, 1997.
75. Algorithm design for parallel computers: some case studies and future directions, Summer Institute on Parallel Discrete Algorithms (PARADISE), Halifax, Canada, July 1996.
76. Distribution-Independent Hierarchical N-body Methods, Michigan Technological University, Houghton, Michigan, April 1996.
77. Distribution-Independent Algorithms for the N-body Problem, Boise State University, Boise, Idaho, April 1996.

VIII. Extension and Outreach Activities

1. Instructor, NSF-NIH Bioinformatics and Computational Biology Summer Institute, Iowa State University, 2003 – 2005.
2. Hosted sabbatical visit of Prof. Desh Ranjan, New Mexico State University, Aug 2000 – May 2001.
3. Visit to Dept. of Computer and Information Science and Engg., University of Florida, June 2-9, 1998.

IX. Graduate Students

Post Doctoral Research Associates Supervised

1. Soumitra Pal (IIT Bombay), Jan 2013 - Present.
2. Olga Nikolova, Aug 2012 - Dec 2012.
3. Jaroslaw Zola, June 2006 - July 2010.
4. Takako Soma, January 2003 - July 2004.
5. K.N.B. Murthy, July 1998 - January 1999.

Ph.D. Degrees Supervised

(Initial employment following graduation in parenthesis)

1. Olga Nikolova (2012Su), “Parallel algorithms for Bayesian networks structure learning with applications in systems biology” (Postdoctoral Research Associate at Sage Networks).
2. Andre Wehe (co-major professor; 2012S), “Large-scale tree parsimony” (Senior software engineer at Atmospheric and Environmental Research).
3. Xiao Yang (2011Su), “Error correction and clustering algorithms for next generation sequencing” (**Cornette Fellowship; ISU Research Excellence Award**; Computational Biologist at Broad Institute).

4. Abhinav Sarje (2010Su), “Applications on emerging paradigms in parallel computing” (**IEEE TCPP Ph.D. Forum award; ISU Research Excellence Award**; Postdoctoral Research Associate at Lawrence Berkeley National Laboratories).
5. Benjamin Jackson (2009Su), “Parallel methods for short read assembly” (**USDA MGET Fellowship; GAANN Fellowship**; AOL Corporation).
6. Scott Emrich (co-major professor; 2007Su), “Assembly and analysis of complex plant genomes” (**ISU Research Excellence Award**; NSF IGERT Fellowship; Faculty member at University of Notre Dame).
7. Pang Ko (2007Su), “Algorithms for large-scale analysis of biological sequence data” (**ISU Research Excellence Award**; Postdoctoral Research Associate at University of California, San Diego).
8. Sudip seal (2007Su), “Parallel methods for large-scale problems in computational electromagnetics and materials science” (Researcher at Oak Ridge National Laboratories).
9. Anantharaman Kalyanaraman (2006Su), “Large-scale methods in computational genomics” (**ISU Research Excellence Award**; IBM Ph.D. Fellowship; Faculty member at Washington State University)
10. Wei Zhu (co-major professor; 2003S), “Spliced alignment and its application in *Arabidopsis thaliana*” (The Institute for Genome Research (TIGR)).
11. Natsuhiko Futamura (2002F), “Algorithms for large scale problems in computational biology” (Faculty member at Wright State University).
12. Fatih Sevilgen (2000Su), “Distribution independent spatial data structures and algorithms with applications”, (**Syracuse University Doctoral Fellowship award**; Faculty member at Gebze Institute of Technology, Turkey).

Masters Degrees Supervised

1. Ankita Mawandia (2012Su), “DISTiled: Ion Torrent data error correction”.
2. Rahul Nihalani (2012Su), “Resolving ambiguities in metagenomic clustering”.
3. Dhanavath Saida (2012Su), “Multicore and manycore algorithms for octrees”.
4. Ankit R. Shah (2012Su), “Parallel methods for NGS error correction”.
5. Robert Farnham (2009S), M.S. Non-thesis.
6. Srikanth Komarina (2004F), “Algorithms for hierarchical clustering of microarray data”.
7. Mahesh Narayanan (2004Su), “Optimal DNA-protein alignments with application to large-scale genome analysis”.
8. Stjepan Rajko (2004S; **ISU Research Excellence Award**), “Space and time optimal parallel sequence alignments”.

9. Nicky Heijadit (2003F; co-major professor), “Implementation of VIA on PowerPC Architecture”.
10. Sachet Shukla (2003Su; Co-major professor), “Identification of regional motifs in the 5′ UTR and their implication in translational control mechanisms”.
11. Bhanu Hariharan (2003S; **ISU Research Excellence Award**), “Distribution independent parallel algorithms and software for hierarchical methods with applications to computational electromagnetics”.
12. Ananth Kalyanaraman (2002Su; **ISU Research Excellence Award**), “Parallel clustering of expressed sequence tags”.
13. W. Chen (2001F), “Implementation of MP_Lite for the VI architecture”.
14. Liang Cao (1999F), “A comparative evaluation of N-body methods based on spherical and rectangular coordinates”.
15. Sudheer Chandarreddy (1999Su), “A parallel software library for hierarchical spatial data structures”.
16. Guo Wei (1999Su), “Multiple biological sequence alignments”.
17. Songrit Maneewongvatana (1996Su), “Parallel algorithms for visibility and line arrangements”.

Current Group

1. Nagakishore Jammula (Ph.D.)
2. Rahul Nihalani (Ph.D.)
3. Tony Pan (Ph.D.)
4. Indranil Roy (Ph.D.)
5. Adarsh Jose (Ph.D.; co-major professor; ISU)
6. Srihari Radhakrishnan (Ph.D.; co-major professor; ISU)
7. Christopher Sabbotta (M.S.; ISU)
8. Sriram Chockalingam (Ph.D.; IIT Bombay)
9. Wasim Mohammed (Ph.D.; IIT Bombay)

X. Professional Activities

Memberships in Professional Societies

Fellow, American Association for the Advancement of Science (AAAS)

Fellow, Institute for Electrical and Electronics Engineers (IEEE) and
IEEE Computer Society

Member, International Society of Computational Biology (ISCB)

Member, Association for the Computing Machinery (ACM)

Member, Society for Industrial and Applied Mathematics (SIAM)

Editorships

1. Associate Editor, *Journal of Parallel and Distributed Computing*, 2011 – present.
2. Associate Editor, *IEEE Transactions on Parallel and Distributed Systems*, 2010 – present.
3. Editor, *International Journal of Data Mining and Bioinformatics*, Inderscience Publishers, 2009 – present.
4. Editor, *Journal of Computing*, Computer Society of India, 2011 – present.
5. Editor, *Encyclopedia of Parallel Computing*, Springer Publishers.

Guest Editorships

1. Guest Editor, *Parallel Computing* special issue on *High Performance Computational Biology*, Vol. 34, No. 11, November 2008. (Co-editor with David A. Bader).
2. Guest Editor, *IEEE Transactions on Parallel and Distributed Systems* special issue on *High Performance Computational Biology*, Vol. 17, No. 8, August 2006. (Co-editor with Nancy Amato and David A. Bader).
3. Guest Editor, *Concurrency and Computation: Practice and Experience* special issue of selected papers from *Workshop on High Performance Computational Biology*, Vol. 16, No. 9, August 2004. (Co-editor with David A. Bader).
4. Guest Editor, *Journal of Parallel and Distributed Computing* special issue on *High Performance Computational Biology*, Vol. 63, No. 7-8, August 2003 (Co-editor with David A. Bader).

Strategic Planning Workshops

1. White House Event, Data to Knowledge to Action: Building New Partnerships, Washington DC, October 2-3, 2013.
2. White House Big Data Workshop, White House Conference Center, Washington DC, May 3, 2013.

3. Indo-U.S. Workshop on Accelerating Bigdata Applications, Pune, India, December 21-22, 2012.
4. DOE ICiS Summer Workshop on Developing a Next Generation Systems Analysis Library, Park City, Utah, July 28 – Aug 4, 2012.
5. DELSA (Data-Enabled Life Sciences Alliance International) Workshop on Supporting Ecosystem for the Life Sciences in the Beginning of the 21st Century, Bethesda, Maryland, May 3-4, 2012.
6. US/India Workshop on Virtual Institutes for Computational and Data-Enabled Science and Engineering, Bengaluru, India, December 21-22, 2011.
7. NSF workshop on Accelerators for Data Intensive Applications: A Workshop to Engage the Science and Engineering Community, Arlington, VA, Oct 14-15, 2010.
8. DOE Workshop on Computational Research Needs in Alternative and Renewable Energy (CRNARE), Rockville, MD, Sep 19-20, 2007.
9. NSF Workshop on Petascale Computing in the Biological Sciences, Arlington, VA, Aug 29-30, 2006.
10. DOE SCaLeS workshop (Science Case for Large-Scale Simulation), Arlington, VA, June 24-25, 2003.

Leadership Roles in Professional Organizations

1. Executive member, Board of Directors, Great Lakes Consortium for Petascale Computation, 2009 – 2013.
2. Vice Chair of IEEE Technical Committee on Parallel Processing, 2007 – 2011.
3. IEEE Computer Society Fellows Committee, 2010 – 2013.

Leadership Roles at Conferences

1. Program Vice Chair for Applications, 4^{3rd} *International Conference on Parallel Processing (ICPP)*, Minneapolis, Minnesota, September 2014.
2. Program Co-Chair, *ACM Bioinformatics, Computational Biology and Biomedicine (BCB) Conference*, Washington D.C., October 2013.
3. Co-General Chair, *IEEE International Conference on Computational Advances in Bio and Medical Sciences (ICCABS)*, New Orleans, Louisiana, August 2013.
4. Program Chair, *Workshop on Parallel Algorithms and Software for Analysis of Massive Graphs (ParGraph)*, *International Conference on High Performance Computing*, Pune, India, December 18, 2012.

5. Panel Chair, *ACM Bioinformatics, Computational Biology and Biomedicine (BCB) Conference*, Orlando, Florida, October 2012.
6. Program Vice-Chair for Algorithms Design and Parallelism, *41st International Conference on Parallel Processing (ICPP)*, Pittsburgh, Pennsylvania, September 2012.
7. Steering committee member, *IEEE International Conference on Computational Advances in Bio and Medical Sciences (ICABS)*, 2011 - present.
8. Steering committee member, *IEEE International Conference on High Performance computing (HiPC)*, 2006-2008, 2010 - present.
9. Program Chair, *4th International Conference on Contemporary Computing (IC3)*, New Delhi, August 2011.
10. Program Vice-Chair for Cross-Cutting Computational Methods and Bioinformatics Infrastructure, *IEEE International Conference on Bioinformatics and Biomedicine (BIBM)*, Washington D.C., November 2009.
11. Program Co-Chair, *1st ISCA International Conference on Bioinformatics and Computational Biology (BiCoB)*, New Orleans, Louisiana, April 2009.
12. Program Vice-Chair for Applications, *ACM/IEEE Supercomputing Conference (SC)*, Austin, Texas, November 2008.
13. Tutorials Chair, *1st International Conference on Contemporary Computing (ICCC)*, New Delhi, India, August 2008.
14. Algorithms and Bioinformatics track chair, *6th ACS/IEEE International Conference on Computer Systems and Applications (AICCSA)*, Doha, Qatar, April 2008.
15. Program Chair, *14th IEEE International Conference on High Performance Computing*, Goa, India, December 2007.
16. Program Vice-Chair for Algorithms and Applications, *International Conference on Parallel Processing (ICPP)*, Si-An, China, August 2007.
17. Program Vice-Chair for Applications, *IEEE International Parallel and Distributed Processing Symposium (IPDPS)*, California, April 2007.
18. Steering committee member, *High Performance Computing Symposium*, March 2007.
19. Program Vice-Chair for Algorithms, *13th IEEE International Conference on High Performance Computing*, Bangalore, India, December 2006.
20. Tutorials Chair, *9th through 12th IEEE International Conference on High Performance Computing*.
 - Goa, India, December 2005.
 - Bangalore, India, December 2004.

- Hyderabad, India, December 2003.
 - Bangalore, India, December 2002.
21. Organizer, Minisymposium on Parallel Computational Biology, *SIAM Conference on Parallel Processing for Scientific Computing*, San Francisco, California, February 2004.
 22. Algorithms and Applications Area Chair of the Technical Papers Committee, *ACM/IEEE Supercomputing Conference*, Phoenix, Arizona, November 2003.

Tutorial Presentation at Conferences

1. Teaching parallel computing through parallel prefix, HPC Educator Session tutorial, *ACM/IEEE Supercomputing Conference (SC)*, Salt Lake City, Utah, November 15, 2012.
2. Algorithmic challenges of next generation sequencing, Workshop on Introduction to Mathematical Techniques in Life Sciences, Indian Institute of Science, Bengaluru, India, January 6, 2011.
3. Exploring Computational Biology with a Massively Parallel High Performance Computing Environment (with K. Jordon), *15th International Conference on Intelligent Systems for Molecular Biology (ISMB)*, Vienna, Austria, July 2007.
4. High-performance Computing Methods for Computational Genomics (with A. Kalyanaraman and D.A. Bader), *IEEE International Parallel and Distributed Processing Symposium (IPDPS)*, Long Beach, California, March 2007.
5. High-performance Computing Methods for Computational Genomics (with A. Kalyanaraman and D.A. Bader), *IEEE/ACM Supercomputing Conference (SC)*, Tampa, Florida, November 2006.
6. Exploring Computational Biology with a Massively Parallel High Performance Computing Environment (with K. Jordon and S.E. Emrich), *14th International Conference on Intelligent Systems for Molecular Biology (ISMB)*, Fortaleza, Brazil, 2006.
7. Indexing Methods for Biological Sequences, Tutorial at *12th International Conference on Management of Data (CoMAD)*, Hyderabad, India, December 2005.
8. Opportunities and Challenges in Computational Biology (with D.A. Bader), *IEEE/ACM Supercomputing Conference (SC)*, Baltimore, Maryland, November 2002.
9. Opportunities and Challenges in Computational Biology, *7th and 8th IEEE International Conferences on High Performance Computing (HiPC)*.
 - Hyderabad, India, December 2001.
 - Bangalore, India, December 2000.

Workshop Organization

1. Founding co-chair, *First through twelfth International Workshops in High-Performance Computational Biology (HiCOMB)*, held in conjunction with *IEEE Parallel and Distributed Processing Symposiums*.
 - Pheonix, Arizona, May 2014.
 - Boston, Massachusetts, May 2013.
 - Shanghai, China, May 2012.
 - Anchorage, Alaska, May 2011.
 - Atlanta, Georgia, April 2010.
 - Rome, Italy, May 2009.
 - Tampa, Florida, March 2008.
 - Long Beach, California, March 2007.
 - Rhodes Island, Greece, April 2006.
 - Denver, Colorado, April 2005.
 - Santa Fe, New Mexico, April 2004.
 - Nice, France, April 2003.
 - Ft. Lauderdale, Florida, April 2002.
2. Founding co-chair, *First through Third Workshops on Bioinformatics and Computational Biology*, held in conjunction with *IEEE International Conferences on High Performance Computing*.
 - Hyderabad, India, December 2003.
 - Bangalore, India, December 2002.
 - Hyderabad, India, December 2001.

Program Committee Memberships

1. *10th International Symposium on Bioinformatics Research and Applications (ISBRA)*, Zhangjiajie, China, June 2014.
2. *IEEE International Conference on Bioinformatics and Biomedicine (BIBM)*, Shanghai, China, December 2013.
3. *19th IEEE International Conference on High Performance Computing (HiPC)*, Bengaluru, India, December 2013.
4. *19th IEEE International Conference on Parallel and Distributed Systems (ICPADS)*, Seoul, South Korea, December 2013.
5. Algorithms track, *ACM/IEEE Supercomputing Conference*, Denver, Colorado, November 2013.
6. Applications track, *42nd International Conference on Parallel Processing (ICPP)*, Lyon, France, October 2013.
7. *1st ASE International Conference on Bigdata*, Washington D.C., September 2013.

8. Applications track, *27th IEEE Parallel and Distributed Processing Symposium (IPDPS)*, Boston, Massachusetts, May 2013.
9. *19th IEEE International Conference on High Performance Computing (HiPC)*, Pune, India, December 2012.
10. *IEEE International Conference on Bioinformatics and Biomedicine (BIBM)*, November 2012.
11. *8th IEEE International Conference on eScience*, Chicago, Illinois, October 2012.
12. *ACM Bioinformatics, Computational Biology and Biomedicine (BCB) Conference*, Orlando, Florida, October 2012.
13. *12th International Conference on Algorithms and Architectures for Parallel Processing (ICA3PP)*, Fukuoka, Japan, September 2012.
14. *8th International Symposium on Bioinformatics Research and Applications (ISBRA)*, Dallas, Texas, May 2012.
15. *18th IEEE International Conference on High Performance Computing (HiPC)*, Bengaluru, India, December 2011.
16. *IEEE International Conference on Bioinformatics and Biomedicine (BIBM)*, Atlanta, Georgia, November 2011.
17. Algorithms Design and Parallelization track, *40th International Conference on Parallel Processing (ICPP)*, Taipei, Taiwan, September 2011.
18. *31st International Conference on Distributed Computing Systems (ICDCS)*, Minneapolis, Minnesota, June 2011.
19. *7th International Symposium on Bioinformatics Research and Applications (ISBRA)*, Central South University, China, May 2011.
20. *IEEE International Conference on Computational Advances in Bio and Medical Sciences (ICCABS)*, Orlando, Florida, January 2011.
21. *IEEE International Conference on Bioinformatics and Biomedicine (BIBM)*, Hong Kong, December 2010.
22. Algorithms and Applications track, *39th International Conference on Parallel Processing (ICPP)*, San Diego, California, September 2010.
23. *ACM International Conference on Computing Frontiers (CF)*, Bertinoro, Italy, May 2010.
24. *6th International Symposium on Bioinformatics Research and Applications (ISBRA)*, Storrs, Connecticut, May 2010.
25. Algorithms and Bioinformatics track, *8th ACS/IEEE International Conference on Computer Systems and Applications (AICCSA)*, Hammamet, Tunisia, May 2010.
26. *24th IEEE International Parallel and Distributed Processing Symposium (IPDPS)*, Atlanta, Georgia, April 2010.
27. *2nd International Conference on Bioinformatics and Computational Biology (BICoB)*, Honolulu, Hawaii, March 2010.
28. *8th Asia Pacific Bioinformatics Conference (APBC)*, Bengaluru, India, January 2010.

29. Bioinformatics and Computational Biology track, *15th International Conference on Parallel and Distributed Systems (ICPADS)*, ShenZhen, China, December 2009.
30. *38th International Conference on Parallel Processing (ICPP)*, Vienna, Austria, September 2009.
31. *16th String Processing and Information Retrieval Symposium (SPIRE)*, Saariselka, Finland, August 2009.
32. *15th International Conference on Computing and Combinatorics (COCOON)*, Niagara Falls, New York, July 2009.
33. Sequence Analysis and Alignment Area Program Committee, *17th International Conference on Intelligent Systems for Molecular Biology (ISMB)*, Stockholm, Sweden, June 2009.
34. Protein Interactions and Networks Area Program Committee, *17th International Conference on Intelligent Systems for Molecular Biology (ISMB)*, Stockholm, Sweden, Stockholm, Sweden, June 2009.
35. *2nd IEEE TCPP Ph.D. Forum*, held in conjunction with *23rd International Parallel and Distributed Processing Symposium (IPDPS)*, Rome, Italy, May 2009.
36. *5th International Symposium on Bioinformatics Research and Applications (ISBRA)*, Ft. Lauderdale, Florida, May 2009.
37. Student Research Symposium, *15th IEEE International Conference on High Performance Computing (HiPC)*, Bangalore, India, December 2008.
38. *9th IEEE International Conference on Computational Science and Engineering*, São Paulo, Brazil, June 2008.
39. *19th Annual Symposium on Combinatorial Pattern Matching (CPM)*, Pisa, Italy, June 2008.
40. *13th International Conference on Database Systems for Advanced Applications (DASFAA)*, New Delhi, India, March 2008.
41. *IASTED International Conference on Parallel and Distributed Computing and Networks (PDCN)*, Innsbruck, Austria, February 2008.
42. *7th International Symposium on Advanced Parallel Processing Technologies (APPT)*, Guangzhou, China, November 2007.
43. *ACM/IEEE Supercomputing Conference (SC)*, Reno, Nevada, November 2007.
44. *Parallel Bio-Computing (PBC) Workshop*, Gdansk, Poland, September 2007.
45. *1st IEEE International Workshop on Service Oriented Technologies for Biological Databases and Tools (SOBDAT)*, Salt Lake City, Utah, July 2007.
46. *IEEE International Symposium on Bioinformatics and Life Science Computing (BLSC)*, Niagara Falls, Canada, May 2007.
47. *International Conference on Computing: Theory and Applications (ICCTA)*, Kolkata, India, March 2007.
48. *3rd SIAM Workshop on Combinatorial Scientific Computing (CSC)*, Costa Mesa, California, February 2007.

49. *ISCA International Conference on Parallel and Distributed Computing Systems (PDCS)*, San Francisco, California, September 2006.
50. *35th International Conference on Parallel Processing (ICPP)*, Columbus, Ohio, August 2006.
51. *IEE International Conference on Computational Science and its Applications (ICCSA)*, Glasgow, U.K., May 2006.
52. *IASTED International Conference on Parallel and Distributed Computing and Networks (PDCN)*, Innsbruck, Austria, February 2006.
53. *12th IEEE International Conference on High Performance Computing (HiPC)*, Goa, India, December 2005.
54. *ACM/IEEE Supercomputing Conference (SC)*, Seattle, Washington, November 2005.
55. *5th IEEE International Symposium on Bioinformatics and Bioengineering (BIBE)*, Minneapolis, Minnesota, October 2005.
56. *6th International Workshop on Advanced Parallel Processing Technologies (APPT)*, Hongkong, October 2005.
57. *ISCA International Conference on Parallel and Distributed Computing Systems (PDCS)*, Las Vegas, Nevada, September 2005.
58. *Workshop on Parallel Bio-Computing*, Poznan, Poland, September 2005.
59. *5th ACM SIGKDD Workshop on Data Mining in Bioinformatics*, Chicago, Illinois, August 2005.
60. *International Workshop on High Performance Computing in Medicine and Biology (HiP-COMB)*, Japan, July 2005.
61. *IEE International Conference on Computational Science and its Applications (ICCSA)*, Singapore, May 2005.
62. *International Conference on Computational Science (ICCS)*, Atlanta, Georgia, May 2005.
63. *IASTED International Conference on Parallel and Distributed Computing and Networks (PDCN)*, Innsbruck, Austria, February 2005.
64. *International Conference on Parallel and Distributed Computing Systems (PDCS)*, San Francisco, California, September 2004.
65. *4th ACM SIGKDD Workshop on Data Mining in Bioinformatics*, Seattle, Washington, August 2004.
66. *International Conference on Computational Science (ICCS)*, Kraków, Poland, June 2004.
67. *International High Performance Computing Symposium*, Winnipeg, Manitoba, Canada, May 2004.
68. *IASTED International Conference on Parallel and Distributed Computing and Networks (PDCN)*, Innsbruck, Austria, February 2004.
69. *10th IEEE International Conference on High Performance Computing (HiPC)*, Hyderabad, India, December 2003.

70. *3rd ACM SIGKDD Workshop on Data Mining in Bioinformatics*, Washington D.C., August 2003.
71. *International Conference on Computational Science (ICCS)*, Melbourne, Australia and St. Petersburg, Russia, June 2003.
72. *Workshop in Bioinformatics, 19th International Conference on Data Engineering*, Bangalore, India, March 4, 2003.
73. *ACM/IEEE Supercomputing Conference (SC)*, Baltimore, Maryland, November 2002.
74. *4th Conference on Computational Biology and Genome Informatics (CBGI)*, Raleigh, North Carolina, March 2002.
75. *IEEE International Symposium on Cluster Computing and the Grid*, Brisbane, Australia, May 2001.
76. *International Conference on Parallel and Distributed Processing Techniques and Applications (PDPTA)*, Las Vegas, Nevada, June 1999.
77. Panel member, Parallel Systems across industry, academia and national laboratories, Rio Grande ACM Meeting, El Paso, Texas, March 27, 1998.

Proposal Panels and Reviews

- 2012 NSF/NIH Bigdata Panel
- 2012 NIH SBIR mail reviews
- 2012 NSF Information and Intelligent Systems (IIS) Panel
- 2012 NIH SBIR mail reviews
- 2012 NSF Computing Research Instrumentation (CRI) Panel
- 2012 NSF iPlant Review Panel
- 2011 NIH SBIR mail reviews
- 2011 NIH Bio Data Management and Analysis (BDMA) Study Section
- 2011 Greek Ministry of Education
- 2011 NSF Information and Intelligent Systems (IIS) Panel
- 2010 Norway Research Council
- 2010 NSF Software Development for Cyber Infrastructure (SDCI) Panel
- 2009 DOE SciDac Center Review Panel
- 2009 NSF Teragrid Review Panel
- 2008 NSF Advances in Biological Informatics (ABI) Panel
- 2008 NSF Cluster Exploratory (CluE) Panel
- 2008 NIH Shared Instrumentation Grant Program
- 2008 NSF Cyber Discovery Initiative (CDI) Panel
- 2007 NIH Shared Instrumentation Grant Program
- 2007 NSF Career mail reviews
- 2006 NIH High Performance Computing Review Panel
- 2005 NSF Computer Systems Architecture Panel
- 2005 NIH Continued Development of Computational Biology Software Study Section
- 2005 NIH Continued Development of Computational Biology Software Study Section

- 2005 NSF Science and Engineering Information Integration Informatics (SEIII) Panel
- 2004 NIH Bio Data Management and Analysis Study Section
- 2003 NSF Advanced Computational Research (ACR) Panel
- 2000 NSF Advanced Computational Research (ACR) Panel
- 2000 NSF Operating Systems and Compilers (OSC) Panel
- 1998 NSF CISE Research Instrumentation (RI) Panel

XI. Institutional Service

Service at Georgia Institute of Technology

College Committees

1. Member, College of Computing advisory committee, 2013 – present.

School Committees

1. Chair, School advisory committee, 2013 – present.
2. Member, Graduate student admissions committee, 2013 – present.

Service at Iowa State University

Administrative Roles

1. Chair, Bioinformatics and Computational Biology graduate program, August 2005 – July 2007.
2. Associate Chair for Research and Graduate Education, January 2003 – June 2006.
3. Associate Chair, Bioinformatics and Computational Biology graduate program, August 2003 – July 2005.

University Planning Conferences

1. Faculty roles in the information age: challenges and opportunities, Faculty Spring Conference, Newton, Iowa, March 31 - April 1, 2000.

University Committees

1. Member, Biotechnology council, 2011 – 2014.
2. Member, High Performance Computing Steering Committee, 2011 – 2013.
3. Member, Search Committee for Vice President for Research and Economic Development, 2008.
4. Member, Welfare and Benefits Committee of the Faculty Senate, 2008 – 2009, 2011 – 2012.

5. Member, University Budget Advisory Committee, 2007 – 2010.
6. Member, Research Computing Council, 2007 – 2011.
7. Member, University group for visioning grand challenges in the fundamental areas of physical and biological sciences, 2007.
8. Member, Provost task force on High Performance Computing, 2006.
9. Member, Advisory Group to the Information Technology Task Force.
10. Member, Computing Research and Information Technology Committee (CRIT).
11. Member, Director Search Committee for Laurence H. Baker Center for Bioinformatics and Biological Statistics, 2000 – 2001.

College Committees

1. Member, Budget and Planning Advisory Council, 2009 – 2012.
2. Member, Honors and Awards Committee, 2009 – 2012.
3. Member, committee to investigate biology courses in engineering education, 2000.

Interdepartmental Committees

1. 2001 – 2009, Member, Supervisory Committee for Bioinformatics and Computational Biology graduate program.
2. 2000 – Member, Policy Committee for Laurence H. Baker Center for Bioinformatics and Biological Statistics
3. 1999 – 2000 Member, Admissions Committee for graduate program in Bioinformatics and Computational Biology

Departmental Committees

1. 2007 – 2011, Promotion and Tenure Committee
2. 2007 – 2009, Chair, Strategic Planning Committee
3. 2006 – Present, ECpE Honors and Awards Committee
4. 2003 – 2006, ECpE Administrative Committee
5. 2003 – 2006, Chair, Graduate Committee
6. 2005 – 2006, Promotion and Tenure Committee
7. 2003, Chair Search Committee
8. 2001 – 2004, Member, Faculty Search Committee
9. 2001 – 2003, Member, Promotion and Tenure Committee
10. 2001, Chair, Qualifying Examination Review Committee
11. 2000, DEO Evaluation Committee
12. 2000 – 2001, Distinguished Colloquium Series
13. 2000 – 2001 Member, Curriculum Committee
14. 1999 – 2000 Member, Graduate Committee

Service at New Mexico State University

1. 1997 – 1999 Chair, Qualifying Examinations
2. 1997 – 1999 Member, Undergraduate Curriculum Committee
3. 1997 – 1999 Member, Graduate Curriculum Committee
4. 1997 – 1999 Member, Awards Committee
5. 1998 – 1999 Member, Molecular Biology Curriculum Committee.
6. 1997 Judge, ACM local programming competition.
7. 1998 Contributed Problems to ACM local programming competition.

Service at Syracuse University

1. 1994 – 1996 Chair, Computer Architecture and Operating Systems Comprehensive Examination.
2. Designed a new set of requirements for the Ph.D. program in Computer and Information Science at Syracuse University in response to a review by the State of New York.